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SIGMA XI QUARTERLY

Vol. X DECEMBER, 1922 No. 4

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Published by the Society of the Sigma Xi

ANNUAL SUBSCRIPTION $1.00 SINGLE NUMBER 25 CENTS

Changes of address should be communicated only to chapter secretaries.

Subscriptions and manuscripts should be sent to the general secretary, Edward Ellery, Union College, Schenectady, N. Y.

Entered as second-class matter July 21, 1915, at the post office at Menasha, Wisconsin, under the Act of August 24, 1912.

Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized on July 5, 1918.

SIGMA XI QUARTERLY

EDITORIAL COMMITTEE

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VOL. X DECEMBER, 1922 No. 4

EDITORIAL

Sigma Xi has grown in size and expanded in spirit to an extent hardly realized by members of the active chapters unless they have given the national society particular attention. There are now thirty-eight chapters, representing twenty-four states, the District of Columbia, and Canada. The total membership of these chapters numbers a little over three thousand. The total alumni membership numbers approximately fifteen thousand. In other words, the society of the Sigma Xi numbers now something over **eighteen thousand members**. This large group of specially trained high grade men and women are for the most part engaged in scientific work of some kind and in all parts of the world. Sigma Xi men and women are not only doing important work in science themselves, but are supporting by small annual contributions scientific fellowships available for work in fields other than Physics and Chemistry and Medical Science. The holder of the first fellowship accomplished important results and is now connected with Johns Hopkins University where he is continuing the work in his chosen field. It is good for Sigma Xi members to keep these facts in mind and impress them upon the undergraduates and others as they come into membership.

CHAPTER REPORTS

(Continued from September number)

THE CORNELL CHAPTER

Six lectures were given under the auspices of the Cornell Chapter as follows:

December 7—The Rôle of Women in Science. PROF. ERNEST COHEN.

December 8—Problems of Population in Relation to Agriculture. DR. E. M. EAST.

January 18—The Nutritive Value of Meat and its Place in the Diet. DR. E. B. FORBES.

March 22—Structural Color in Feathers (Illustrated). PROF. W. D. BANCROFT.

April 19—The Piezo-Electric Effect in Certain Crystals. DR. A. MCNICOLSON.

May 10—Recent Developments in Public Health. Organization. PRESIDENT LIVINGSTON FARRAND.

June—Honor Societies Day. Joint Meeting of Phi Beta Kappa, Sigma Xi, Tau Beta Pi, Phi Kappa Phi.

The following were elected to membership:

GRADUATE STUDENTS

HUGH K. AIKEN, JR., B.S. (Davidson College, 1918)
Assistant in Chemistry

WILLIAM J. BAERG, A.B. (University of Kansas, 1915)
Professor of Entomology at Univ. of Arkansas

LELAND JAYNIS BOARDMAN, A.B. (Oberlin, 1910)
Instructor in Physics

STANLEY ROSS BURLAGE, B.S., (Cornell, 1917) A.M. (Cornell, 1919) *Instructor in Physiology*

JOHN LEVENUS BUYS, B.S. (Cornell, 1919), M.S. (Cornell, Feb. 1921) *Assistant in Entomology*

HSI-CHING CHEN, B.S. (Tufts College, 1921) *Chemistry*

EDWARD RAYMOND CUSHING, D.V.M. (Cornell, 1920).
Instructor in Medicine, Obstetrics and Ambulatory Clinic, N. Y. State Vet. College

EVELYN IDA FERNALD, A.B. (Vassar, 1912), A.M. (Cornell, 1921) *Instructor in Botany*

MYRON GUSTIN FINCHER, D.V.M. (Cornell, 1920) *Instructor in Medicine, Obstetrics and Ambulatory Clinic, N. Y. State Vet. College*

JAY JOHN GRIMM, B.S. (Grinnell, 1910) *Professor of Biology, Carroll College, Waukesha, Wis.*

FLOYD HODSON, A.B. (Indiana Univeristy, 1920) *Assistant in Geology*

RALPH MAYNARD HOLMES, B.A. University of Maine, 1911), M.A. *Instructor in Physics*

KARL C. HYDE, B.A. (Indiana University), M.A. (Cornell, 1921) *Instructor in Botany*

ROBERT STEARNS KIRBY, B.S. in Agr. (New Mexico A. and M. A. College, 1916), M.S. in Agr. (Iowa State College, 1917) *Instructor in Plant Pathology*

WALTER EARL LOOMIS, B.S. (Univ. of Illinois, 1921) *Assistant in Vegetable Gardening*

ALTON L. MARKLEY, B.S. (Washington State College, 1919), M.S. (Cornell) *Assistant in Chemistry*

JAMES HART CURRY MARTENS, C.E. (Cornell, 1921) *Assistant in Geology*

MABEL FLORENCE MARTIN, A.B. (Mt. Holyoke, 1918) *Assistant in Physiology*

CLYDE WALTER MASON, A.B. (University of Oregon, 1914) *Assistant in Chemistry*

S. ALICE MCNULTY, A.B. (Cornell, Feb., 1920) *Heckscher Research Assistant*

EDNA LILLIAN MEACHAM, A.B. (Bucknell, 1909), A.M. (Cornell, September, 1921) *Instructor of Physics at Univ. of Wisconsin*

VICTOR ELVERT MONNETT, A.B. (Okla. State University, 1912) *Instructor in Geology*

DAVID SHERMAN MORSE, A.B. and Pd.M. (New York Univ., 1917), A.M. (Harvard, 1918) *Instructor in Mathematics*

KUNITARO NIINOMI, Tokyo Higher Normal College (No degree); *Geology*

JESSE OSBORN, A.B. (Berea College, 1917), A.M. (Kentucky, 1920) *Instructor in Mathematics*

ABRAHAM PORITSKY, B.S. (Cornell, Feb. 1920) *Physics*
HILLEL PORITSKY, A.B. (Cornell, 1920) *Instructor in Mathematics*
ARTHUR JOHN RIDER, B.S. (Colgate University, 1912), M.S. (Colgate University, 1914) *Instructor in Chemistry*
AUSTIN WERTMAN WILLIAM SAND, B.S. (Cornell, 1920), M.S. (Cornell, 1921) *Instructor in Floriculture*
BERNARD SMIT, B.S. (Cornell, 1921) *Assistant in Entomology*
GEORGE HUME SMITH, A.B. (Wabash, 1918) *Botany (Agr.)*
CHARLES OSCAR SWANSON, A.B. (Carleton College, 1899), M.S.A. (Univ. of Minnesota, 1905) *Agronomy*
FELIX FRANCO Y TOLOSA, B.S.F. (Univ. of Montana, 1921) *Forestry*
CECIL VIVIAN VON ABO, B.A. (Grey Univ., Bloemfontein, South Africa, 1913), B.Sc. in C.E. (Univ. of Capetown, 1917), M.A. in Pure Mathematics (Capetown, 1918), M.A. in Applied Mathematics (Capetown, 1919). *Civil Engineering*
CARL LOUIS WILSON, A.B. (University of Denver, 1919), A.M. (Cornell, 1921), *Assistant in Botany*
IRVING WOLFF, B.S. (Dartmouth, 1916) *Instructor in Physics*
CHENFU FRANCIS WU, B.S. (Soo Chow Univ., 1913), M.A. (Soo Chow Univ., 1919) *Fellow in Agriculture 1921-22*

MEMBERS OF THE CLASS OF 1922

ROBERT EMMETT BURK *Chemistry*
EDWARD ARTHUR CASLICK *Assistant in Pathology*
ELEANOR MCELROY DORR, *Botany et al*
SEYMOUR WASHINGTON FERRIS, B. Chem. (Cornell, Feb. 1922) *Chemistry*
HAROLD ELLSWORTH GOLDSMITH, *Chemistry*
WARNER LAWRENCE OVERTON, *Physics*
FRANCIS ALBERT PORTER, *Chemistry*
ROY CLARENCE SPENCER, *Physics and Astronomy and Geology et al*
WILLIAM FORRESTER STOTZ, . *Chemistry*
FRED WILLIAM WARBURTON, *Assistant in Physics*

ALUMNI

LIVINGSTON PIERSON TEAS, B.S. (Penn. State, 1916), *Geology*
PAUL WHEELER THOMPSON, M.E. (Cornell, 1910) *Mechanical Engineering*

SPECIALS

ERNEST FREDERICK ARTSCHWAGER, B.S. (Cornell, 1915), Ph.D. (Cornell, 1918), *Botany (Agr.)*

ANNA KELLMAN WHITCHURCH, A.B. (Lawrence, 1916), A.M. (Northwestern, 1917), Ph.D. (Cornell, 1921), *Psychology*

A. H. WRIGHT, *Secretary*

THE MINNESOTA CHAPTER

SUMMARY OF ACTIVITIES FOR 1921-22

December 15—Report of auditing committee accepted. Professor W. H. Emmons gave a lecture on "The Matallogeny of the Earth's Hinge Zone." Refreshments were served after the meeting.

February 7—Lecture by Professor Henry C. Cowles, of the University of Chicago, on "Sand Dunes and their Vegetation"; a twenty-five year study.

April 27—Professor W. S. Cooper spoke on "Glaciers and Vegetation in Southeastern Alaska."

May 11—Election of new members and awarding of Sigma Xi prizes for undergraduate research.

May 18—Professor Frederick Bass discussed "The Power Resources of the United States."

June 2—Annual election of officers for 1922-23. Election of additional new members to the Society.

June 12—Annual Dinner and Initiation. The following newly elected members were initiated:

SIGMA XI PRIZES FOR UNDERGRADUATE RESEARCH

CARL W. STOMBERG
THOMAS S. LOVERING
STEPHEN F. DARLING

UNDERGRADUATES

E. S. BJONERUD
J. M. DOWNIE
H. F. DROST
O. E. DUNNUM
HENRY FORBES
R. J. HEIDELBERGER
J. E. MAGNUSSON
GARDNER S. REYNOLDS

GRADUATES

Olaf S. Aamodt
Clifton W. Ackerson
Victor T. Allen
Philip Brierley
J. W. Buchta
G. O. Burr
Chien Cha
Pu Yung Chang
E. J. Colberg
Chester D. Dahle
Carlos W. del Plaine
John Edwin
Robert D. Evans
Hal F. Fruth
Paul M. Gilmer
Hoff Good
James B. Harrington
Lucile Kranz Heisig
Herman H. Jensen
Leonard W. Larson
I. Maizlish
Oliver J. Morehead
Ethel Mygrant
Edmond Nelson
R. J. Noble
Norville C. Pervier
W. C. Peterson
Emmet Rowles
Louys A. Rumsey
W. M. Sandstrom
Landon A. Sarver
H. A. Schmitt
Arthur E. Stoppel
Sven A. Vaule
Elwyn H. Welch
Herman Zanstra

FACULTY

R. B. Harvey
L. I. Smith

Address: "Modern Physics," by President J. T. Tate.

A. T. Rasmussen, *Secretary*

THE CALIFORNIA CHAPTER

In accordance with its usual custom, the chapter chose its speakers for the meetings, with one exception, from the active membership of the society. Meetings are held monthly, at the Faculty Club, and consist of business matters, the reading and discussion of some scientific paper (usually illustrated with lantern slides) and then a social hour, at which refreshments are served. Following is the list of meetings.

September 14, 1921. S. S. Maxwell (Physiology) "Animal Equilibration."

October 12, 1921. J. Grinnell (Zoology) "Burrowing Rodents as Agents in Soil Formation." At this meeting it was voted to receive

and act on nominations of women for membership, beginning with the spring of 1922.

December 6, 1922. R. T. Birge (Physics) "Recent Investigations in Spectroscopy and Their Relation to Atomic and Molecular Structure."

February 8, 1922. R. E. Clausen (Genetics) "Some Genetic Relations Between Different Species of Tobacco."

March 28, 1922. J. S. Kingsley (Anatomy, University of Illinois, retired) "What is a Backbone?"

April 19, 1922. W. M. Latimer (Chemistry) "Some Problems in Low Temperature Research." At this meeting the new members were initiated,—21 to full membership, 81 to associate membership, and 19 promoted from associate to full membership.

May 11, 1922. G. L. Louderback (Geology) (Retiring President) "Changes in the Aspect of the California Region in Recent Geological Time." Annual election of officers.

RAYMOND T. BIRGE, *Secretary*

THE IOWA CHAPTER

The Iowa Chapter at the State University of Iowa at Iowa City this year held four meetings at which scientific papers were presented and demonstrations of research in progress were made. The chapter this year adopted the plan of meeting in the rooms of the different departments respectively, the staff of the department visited, presenting the program for the evening. The following programs were given in this way:

December 7, 1921, Department of Geology: "Recent Progress in Palaeobotany on the Pacific Coast," RALPH W. CHANEY. "Some Practical Applications of Geologic Research to Mining," JOSEPH J. RUNNER. "Fossil Crustacea of Iowa," OTTO WALTER. "Further Discussion of the Pleistocene of Iowa," GEORGE F. KAY.

January 25, 1922, Child Welfare Research Station: "New Phases of the Nutrition of Children," AMY L. DANIELS. "The Future Course of Human Genetics," PHINEAS W. WHITING. "The Function of the Iowa Child Welfare Research Station," BIRD T. BALDWIN.

April 5, 1922, Department of Psychiatry: "The Organization of Research in the Psychopathic Hospital," WILLIAM A. ORTON.

May 3, 1922, Department of Physics: Researches in Progress under G. W. STEWART: "Investigation of the absorption and emission spectra of the K and L series of tungsten." (Crofutt.) "Specific resistant of thin films of silver, iron and copper." (Steinberg.) "Acoustic wave filters—theory and experiment." (Stewart.) "The phase change in acoustic wave filters—theory." (Stewart.) "The attenuation factor in the acoustic wave filter." (Peacock.) "The action of conical horns—theoretical." (Hoersch.) Researches in Progress under L. P. SIEG: "A direct measurement of the principal reflecting powers of crystals of selenium and tellurium." (Sieg.) "The new method for the determination of the optical constants of metals in the form of small crystals with results, especially in the ultra-violet apparatus." (Weld.) "On the optical constants of certain crystals—theoretical." (Sieg.) "The optical constants of tellurium crystals—experimental." (Van Dyke.) Researches in Progress under C. W. HEWLETT: "Scattering of X-rays by light atoms." (Hewlett.) "An Investigation into the behavior of various dielectrics when carrying alternating currents." (Lindeman.) "A new tone generator." (Hewlett.) Researches in Progress under E. O. HULBURT: "Magnetic rotary dispersion in colloidal solutions." (Sorensen.) "Action of cylindrical coils carrying radio frequency current." (Parlin.) "Electric phenomena in gaseous discharge produced by ratio frequency potentials." (Hulburt.) "Broadening of the Balmer lines of hydrogen with pressure." (Hulburt.) "Path of rigid electron which moves in a magnetic field rotating with constant angular velocity—theoretical." (Hulburt.)

In addition to these meetings in connection with which there were business sessions of the chapter, there were held three other meetings as follows:

July 22, 1921, Initiation of new members elected during the summer.

November 2, 1921, Address of the retiring president, "The Modern Telephone," Professor A. H. FORD.

March 8, 1922, Initiation and Annual Dinner.

Companions In Zealous Research ..... JOHN C. STEINBERG, WILLIAM HARMON NORTON

Reminescences of DR. WILLIAM OSLER..... CAMPBELL P. HOWARD

The following were elected and initiated during the summer of 1921:

GRADUATE STUDENT TO ACTIVE MEMBERSHIP

JOHN RUSSUM COUTURE, B.Sc. Washburn College, 1919, M. Sc. Iowa, 1921.

UNDERGRADUATE STUDENT TO ASSOCIATE MEMBERSHIP

HENRY PRICE HOWELLS, *Major in Chemical Engineering.*

FACULTY TO ACTIVE MEMBERSHIP

LEE WALLACE DEAN, B. A. Iowa, 1894; M. D. Iowa, 1896.
Professor of Ophthalmology, Oto-Laryngology and Oral Surgery. Dean of the College of Medicine.

SAMUEL TORREY ORTON, B.S. Ohio State, 1901, M.D. Penna., 1905, A. M. Harvard, 1906.
Professor of Psychiatry, Director of Psychopathic Hospital.

CLARENCE WILSON HEWLETT, B. E. North Carolina, 1906, Ph. D. *Assistant Professor of Physics.*

EDWARD OLSON HULBURT, A. B. Johns Hopkins, 1911.
Assistant Professor of Physics.

LORLE IDA STECHER, A. B. Bryn Mawr, 1912; A. M. Bryn Mawr, 1913, Ph. D. Columbia, 1916.
Research Assistant Professor of Child Welfare

FROM NEIGHBORING INSTITUTIONS TO ACTIVE MEMBERSHIP

WILLIAM HARMON NORTON, A. B. Cornell College, 1875; A. M. 1878, LL. D. Iowa, 1911.
Professor of Geology, Cornell College.

WALTER SCOTT HENDRIXSON, B. S. Union Christian College, 1882; M. A. Harvard, 1889; Ph. D. Harvard, 1893.
Professor of Chemistry, Grinnell College.

GRADUATE STUDENTS TO ACTIVE MEMBERSHIP

JOHN C. STEINBERG, B.S. Coe College, 1916, M.S. 1917, *Physics.*

HAROLD AGUSTUS IDDLES, B.Sc. Mich. Agric., 1918; M.Sc. Iowa, 1921. *Organic Chemistry.*

GERALD CLIFFORD BAKER, A. B. Ill., 1917; M. S. Ill., 1919; Ph. D Iowa, 1922. *Chemistry*

GRADUATE STUDENTS TO ASSOCIATE MEMBERSHIP

C. B. Crofutt, Mount Vernon,	*Physics*
Louise Fillman, Dexter,	*Geology*
Paul L. Mercer, Iowa City,	*Applied Science*
Wellington A. Parlin, Iowa City,	*Physics*
Andrew J. Sornesen, Cedar Falls,	*Physics*
George D. VanDyke, Greenup, Ill.,	*Physics*

UNDERGRADUATES FOR ASSOCIATE MEMBERSHIP

John E. Adams, Cedar Rapids,	*Geology, Liberal Arts*
Glenn P. Aldrich, Corning,	*Physics, Liberal Arts*
C. E. Arvidson, Shenandoah,	*Electrical, Applied Science*
Louis E. Baggs, Des Moines,	*Applied Science*
Otto Brysch, Iowa City,	*Chemical, Applied Science*
Herman F. Johnson, Iowa,	*Medicine*
Verner R. Muth, Osage,	*Applied Science*
Phillip T. Newsome, South English,	*Chemical, Applied Science*
Lloyd North, Iowa City,	*Geology, Liberal Arts*
James F. Phillips, Altoona,	*Applied Science*
Alan C. Rockwood, Iowa City,	*Electrical, Applied Science*
Frank H. Stohr, Muscatine,	*Electrical, Applied Science*
Charles M. Toynbee, Davenport,	*Chemical, Applied Science*
Frank G. Valiquette, Sioux City,	*Medicine*
Florence E. White, Iowa City,	*Medicine*
Edward F. Wilsey, Keokuk,	*Applied Science*

Clifford H. Farr, *Secretary*

THE CASE CHAPTER

The following were elected to associate membership in the Case Chapter of Sigma Xi on March 8, 1922:

* Badger, Alfred E., 1314 E. 76 Place, Cleveland, Ohio.
* Beyer, Jacob E., 1317 E. 112 St., Cleveland, Ohio.
* Bowman, K. B., 455 S. Main St., Bowling Green, Ohio.
* Brumbaugh, John D., Moultrie, Ohio.
* Burdett, Donald D., 2974 Berkshire Rd., Cleveland Heights, O.
* Eaton, Reginald O., 8707 Detroit Ave., Cleveland, Ohio.
Frew, Harold L., 1606 Crawford Rd., Cleveland, Ohio.
Grabiel, Floyd E., 847 Bowman St., Wooster, Ohio.

* HOLCOMB, LAWRENCE K., 1339 Mathews Ave., Lakewood, Ohio.
* HYDE, MERRITT A. JR., 104 Spring St., Marietta, Ohio.
PERKINS, FRED M., Wooster, Ohio.
* PLUMMER, FRED L., Case School Appld. Science, Cleveland, Ohio.
ROBERTS, HAROLD B., 1641 Carlyon Rd., Cleveland, Ohio.
TEMPLE, ROBERT B., 1932 E. 116 St., Cleveland, Ohio.
* SCHNEIDER, MERLIN R., R. D. No. 2, Canton, Ohio.
* SMITH, A. KELVIN, 11333 Bellflower, Rd., Cleveland, Ohio.
* TORGLER, EDWARD R., 1790 E. 101 St., Cleveland, Ohio.
* WISE, ROYALE C., 3111 Euclid Heights Blvd., Cleveland, Ohio.

The men above with the * before their names were elected to full membership on May 22, 1922; in addition the following were elected to full membership at the same time:

BAYNE, FREDERICK W., 1459 Mars Ave., Lakewood, Ohio
BEEKLEY, EUGENE A., West Chester, Ohio.
CAMPBELL, HENRY W., 522 S. Main St., Ironton, Ohio.
GLIDDEN, HERBERT W., 1792 Radnor Rd., Cleveland, Ohio.
HUXLEY, ROY D., Case School of Appld. Science, Cleveland, Ohio.

The officers for this year are:

President	H. M. BOYLSTON
Vice-president	J. J. NASSAU
Treasurer	T. M. FOCKE
Secretary	N. A. LANGE

N. A. LANGE, *Secretary*

INDIANA CHAPTER

The Indiana Chapter meets once a month and the meetings are combined business, scientific and social.

The following officers have been elected for the year 1922-23:

President	PROFESSOR JOHN B. DUTCHER
Vice-president	PROFESSOR CLYDE A. MALOTT
Secretary	DR. FLORA ANDERSON
Treasurer	PROFESSOR PAUL HARMON

During the year members have been elected as follows:

FACULTY

GREEN, WILLIAM THOMAS	*Medicine*
PITKIN, EDWARD M.	*Anatomy and Surgery*
RITCHEY, JAMES OSCAR	*Medicine*
ROSE, EMBREE RECTOR	*Chemistry*

GRADUATES

ADDINGTON, ARCH ROMBAUGH	*Geology*
ETTER AUSTIN P.	*Botany*
FERGUSON, LUTHER SHORT	*Geology*
FRAZE, JAMES WILLIAM	*Chemistry*
MADENWALD, FREDERICK ALBERT	*Chemistry*
RAY, KENNETH WILBERT	*Chemistry*

THE WISCONSIN CHAPTER

During the year the chapter held six scientific meetings as follows:

November 2, 1921, "Non-Euclidian Geometry," by H. W. MARCH, Associate Professor of Mathematics, University of Wisconsin.

December 7, 1921, "Plant Pigmentation."

The Chemist's viewpoint was presented by Professor E. KREMERS, of the Chemistry Department, University of Wisconsin, and the botanical phases of the subject were presented by Professors J. B. OVERTON, G. M. SMITH and E. W. LINSTROM all of the University of Wisconsin.

January 18, 1922. "The Relation of Chemical Constitution to Pharmacological Action," by A. S. LOEVENHART, Professor of Pharmacology, University of Wisconsin.

March 1, 1922, "The Proposed St. Lawrence Waterway," by D. W. MEAD, Professor of Hydraulic and Sanitary Engineering, University of Wisconsin.

April 26, 1922, "The Geologic Perspective of Life," by C. K. LEITH, Professor of Geology, University of Wisconsin.

May 24, 1922, "Properties of Radio Circuits," by EDWARD BENNETT, Professor of Electrical Engineering, University of Wisconsin, "Methods of Modulation and Detection in Radiotelephony," by E. M. TERRY, Associate Professor of Physics, University of Wisconsin.

The membership at the beginning of the year was 256. During the year sixty new members were elected of whom seven were from the faculty and fifty-three were graduate students.

The chapter enjoyed a prosperous year and the meetings were well attended.

E. TRUOG, *Secretary*

THE WASHINGTON CHAPTER

The chapter held meetings throughout the academic year at which the following papers were read:

October 19, "Tertiary Paleontologic and Geologic Investigations in Central America and Northern South America," CHAS. E. WEAVER.

November 19, "Recent Results in the Experimental Aspects of Relativity," E. T. BELL.

December 7, "Electric House Heating," E. A. LOEW.

December 15, "Distribution of Intelligence Based on Army Experience," E. R. GUTHRIE, and, "Analysis of Intelligence Tests Given at the University of Washington," W. R. WILSON.

January 31, "The Thermionic Vacuum Tube and Its Use in Communication," JOHN MILLS of the Research Laboratory of the Western Electric Company. (Open meeting.)

February 10, "Relation of Heredity to Tuberculosis," DR. PAUL A. LEWIS, Director of the Henry Phipps Institute for Tuberculosis. (Open meeting.)

February 28, "Experiments on Salmon Feeding," MARTIN NORGORE.

March 14, "Some Unexpected Agreements Between Mathematical and Experimental Hydrodynamics," C. W. HARRIS.

April 18, "A Simple, Rapid Method for the Accurate Determination of Halogen in Organic Substances."

May 23, "A Bog Forest Near Victoria, B. C.," G. B. RIGG, and, "The White Pine Blister Rust," J. W. HOTSON.

June 6, "Theories of Atomic Structure," Presidential Address, S. H. ANDERSON.

In addition, the annual joint meeting with Phi Beta Kappa was held, the speaker of the evening being President RAY LYMAN WILBUR of Stanford University.

The Board of Electors announced as a policy for the year the following principles:

(1) A candidate for active membership must show research ability in a definite way by having published, or by having had accepted for publication, one or more papers giving an account of his research work in a technical or scientific journal of recognized standing.

(2) A candidate for associate membership must show promise

of research ability by an unusual scholastic record with four-fifths or more of his credits A's and B's (i.e., above 85 per cent), or by some other definite evidence. It is recognized that a candidate may have only a fair or good scholastic record as an undergraduate and yet develop into a strong research worker. But the Board does not feel warranted in considering such a candidate until he has actually shown some evidence of research.

The following persons were elected to membership:

ACTIVE MEMBERS

Albert Lee Bennet	*Chemistry and Ceramics*
Harmon E. Keyes, B. S.	*Chemistry*
Echo Dolores Pepper, B. S.	*Mathematics*
Edwin Ray Guthrie, Ph. D.	*Psychology*
F. C. Houghton, M. S.	*Physics*
George E. Whitwell, B.S.	*Chemistry*

ASSOCIATE MEMBERS

Helen Lothian Arkley	*Pharmacy*
Ray W. Clough	*Chemistry*
Orin Anton Demuth	*Electrical Engineering*
Thomas Edward Hall	*Chemistry*
Edith M. Johnson	*Bacteriology*
Florence Elizabeth Johnson	*Chemistry*
Wm. Elmer Kamholz	*Electrical Engineering*
George Elwyn Large	*Civil Engineering*
Roy Eric Lindblom	*Electrical Engineering*
Leona M. Sundquist	*Botany*
Harold H. Watson	*Electrical Engineering*
Cecil Rowland West	*Chemistry*
Constance May West	*Chemistry*
William Gray Wilson	*Mathematics*

Officers for the year 1922-23 were elected as follows:

President	John Weinzirl
Vice-president	J. C. Rathbun
Secretary	R. M. Winger
Treasurer	E. A. Loew

R. M. Winger, *Secretary.*

THE MAYO FOUNDATION CHAPTER

The first year of the active chapter of Sigma Xi at the Mayo Foundation, during which we have held regular monthly meetings, has been a very successful one. The form of meeting adopted by the chapter is that of having a supper at 6:15, during which most of the business is transacted. Immediately following the supper the scientific program is held.

At the first meeting, held in September, Dr. T. S. Roberts of Minneapolis delivered an address on "Itasca Park." This meeting was made a public one and was well attended. At the October meeting Mr. A. E. Osterberg spoke on "Methods of Communication in the United States Army." In November Dr. J. H. Stokes addressed the Society on the subject of "The Black Fly." At the December meeting Dr. W. C. MacCarty spoke on "Fundamental Principles of Education." In January Dr. H. E. Robertson discussed the problem of airship construction. The February meeting was open to the public, at which time Professor Clinton Stauffer, Professor of Geology in the University of Minnesota, delivered an address on the subject of "Ancient Reptiles of North America." The March meeting was given over to business and the election of new members to the Society. At the April meeting Dr. Chas. H. Mayo delivered an interesting travelogue on his recent trip West. The May meeting was devoted to the election of officers and the initiation of new members. At this time the symbol "MF" was adopted as the designation for this Chapter's Keys. The new members initiated during the year 1921-22 are:

James Arthur Buchanan, M. D., *Fellow in Medicine*
William Calvert Chaney, M. D., *Fellow in Medicine*
Linwood Dickens Keyser, B.A., M.D., M.S. in Path., *Fellow in Surgery*
Albert John Scholl, A. B., M. D., *Fellow in Urology*
Henry Frederick Helmholz, B. S., M. D., *Professor Pediatrics, University of Minnesota, (Mayo Foundation)*
Reginald Fitz, B. A., M. D., *Professor Medicine (Mayo Foundation)*
Norman McDonnell Keith, B. A., M. D. *Assistant Professor Medicine, University of Minnesota, (Mayo Foundation)*

FREDERICK ARTHUR WILLIUS, B. S., M. D., M. S. in Medicine
Instructor in Medicine, University of Minnesota, (Mayo Foundation)
ARCH HODGE LOGAN, M.D.,
Associate Professor Medicine, University of Minnesota, (Mayo Foundation)

HERBERT ZIEGLER GIFFIN, B.S., M.D.,
Associate Professor Medicine, University of Minnesota, (Mayo Foundation.)

MELVIN STARKEY HENDERSON, M.D.,
Professor Orthopaedic Surgery, University of Minnesota, (Mayo Foundation)

SAMUEL AMBERG, M.D.,
Associate Professor Pediatrics, University of Minnesota, (Mayo Foundation)

WILLIAM LEMUEL BENEDICT, M.D.,
Professor of Ophthalmology, University of Minnesota, (Mayo Foundation)

WILLIS STORRS LEMON, M.B.,
Associate Professor Medicine, University of Minnesota, (Mayo Foundation)

T. B. MAGATH, *Secretary.*

THE NORTH DAKOTA CHAPTER

Three scientific meetings were held during the year, the first on January 21, at which time Professor E. F. CHANDLER of the Department of Civil Engineering submitted a report on the "Drainage Areas of the State of North Dakota." By careful compilation he had succeeded in placing essentially every square mile of surface in one drainage area or another.

On March 7, DR. H. C. TRIMBLE addressed the Society on "Some Recent Advances in Our Knowledge of the Chemistry of Ammonia," and explained particularly the various methods of fixating nitrogen.

On May 23, Professor D. R. JENKINS of the Department of Electrical Engineering reported on "Engineering Research and the Recruiting of Research Workers," in which he outlined some of the larger problems seeking solution and suggested practicable methods of creating interest in the boy at an early age that he might develop the research spirit.

One of the pleasant features of the year was a visit from National Secretary Dean EDWARD ELLERY on May 29, at which time the local problems were discussed. Dean ELLERY was shown the facilities of the University for research and the visit was terminated in an informal banquet of members and ladies.

Two active members and seven associate members were initiated during the year. The fields of research of the two active members are: DR. ALDO C. MASSAGLIA, Pathology: Some forty-eight published articles in four languages. Professor HOWARD E. SIMPSON: "The Geology of Underground Waters." Several extended reports notably on the ground waters of Iowa and North Dakota.

The associate members and the department in which they are specializing are:

A. W. BELL,	*Medicine*
SOPHUS BOLME,	*Chemistry*
ERNEST COON,	*Chemistry*
EUGENE L. HOUGH,	*Electrical Engineering*
ROBERT H. JOHNSTONE,	*Medicine, Biology*
RAYMOND S. MCCRADIE,	*Medicine*
R. BONNER WITMER,	*Electrical Engineering*

During the year the Society cooperated with the local Science Club, nine of its members contributing papers on scientific subjects to the programs.

The officers elected for 1922-23 are:

President	D. R. JENKINS
Vice-president	H. J. HUMPSTONE
Secretary-Treasurer	L. P. DOVE

L. P. DOVE, *Secretary*.

THE SIGMA XI CLUB OF THE UNIVERSITY OF OKLAHOMA

The present year has started off auspiciously for the Sigma Xi Club of the University of Oklahoma. We have four additional Sigma Xi men on the Faculty this year and sustained two losses by resignation. This gives us a total local presentation of twenty-four men. We are holding meetings twice each semester, the one held on October 19, being addressed by DR. J. K. BREITENBECHER, who spoke on the subject "The Mechanism of Heredity as Illustrated by Bruchus."

The officers for the current year are:

President DR. A. RICHARDS
Secretary-Treasurer J. B. UMPLEBY
J. B. UMPLEBY, *Secretary*

THE SIGMA XI CLUB OF DULUTH

The club held a meeting on November 25 at the Chamber of Commerce. DR. E. L. TUCHY presented in an extremely interesting and thought-provoking way the results of his observations during an extended trip in Europe and Great Britain. He dealt particularly with economic conditions and post-war psychology of the peoples of Europe and with the probable future reactions and results thereof.

MR. CHARLES F. GOLDTHWAITE was elected president and MR. E. W. KELLY secretary for the ensuing year.

CHAPTER OFFICERS

LIST FURNISHED BY THE CORRESPONDING SECRETARIES OF THE CHAPTERS

CHAPTER	PRESIDENT	VICE-PRESIDENT	SECRETARY	TREASURER
Cornell	T. R. Briggs	H. P. Weld	A. H. Wright	O. A. Johannsen
Rensselaer	M. A. Hunter	R. B. Bourne	E. M. Clark	W. J. Williams
Union	J. N. Vedder	J. H. Stoller	M. F. Sayre	M. F. Sayre
Kansas	F. B. Dains	W. S. Hunter	G. W. Smith	H. E. Jordan
Yale	R. G. VanName	S. J. Record	M. R. Thorpe	A. H. Smith
Minnesota	J. T. Tate	T. S. Palmer	A. T. Rasmussen	F. B. Kingsbury
Nebraska	R. J. Pool	M. A. Swenk	E. N. Andersen	M. G. Gaba
Ohio	R. C. Osborn	M. Hollingsworth	Edward Mack	T. G. Phillips
Pennsylvania	A. C. Abbott	W. C. Farabee	D. W. Steckbeck	H. S. Coulton
Brown	C. H. Currier	R. C. Archibald	R. F. Borden	S. Wilmot
Iowa	L. P. Sieg	L. C. Raiford	C. H. Farr	J. F. Reilly
Stanford	E. C. Franklin	J. O. Snyder	J. E. Coover	J. E. Coover
California	S. J. Holmes	J. H. Hildebrand	T. P. Clendenin	T. P. Clendenin
Columbia	W. I. Schlichter	W. B. Fite	H. A. Fales	H. A. Fales
Chicago	F. R. Moulton	A. J. Carlson	C. R. Moore	C. R. Moore
Michigan	A. F. Shull	A. S. Warthin	S. R. Guild	C. V. Weller
Illinois	C. S. Crandall	T. E. Savage	J. H. Rudy	F. B. Seely
Case	H. M. Boylston	J. J. Nassau	N. A. Lange	T. M. Focke
Indiana	J. B. Dutcher	C. A. Malott	Flora Anderson	Paul Harmon
Missouri	W. A. Tarr	W. J. Robbins	C. R. Moulton	O. R. Johnson
Colorado	R. D. Crawford	I. E. Wallin	Paul W. Dean	F. S. Bauer
Northwestern	C. B. Atwell	F. C. Whitmore	A. E. Cole	M. B. Fuller
Syracuse	O. W. H. Mitchell	C. C. Adams	L. M. Hickernell	H. F. A. Meier
Wisconsin	A. S. Pearse	E. M. Terry	E. Truog	R. H. Dennison
University of Washington	John Weinzerl	J. C. Rathbun	R. M. Winger	E. A. Loew
Worcester	M. Masius	D. F. Calhane	C. D. Knight	A. J. Knight
Purdue	A. N. Topping	R. H. Carr	T. E. Mason	H. S. Jackson
Wash. Univ.	W. H. Roever	F. B. Hanson	P. R. Rider	L. Pyle
District of Columbia	Paul Bantsch	J. W. Smith	M. C. Hall	L. E. Whittemore
Texas	W. A. Felsing	R. L. Moore	H. J. Muller	P. A. Batchelder
Mayo Foundation	W. C. Kendall	W. C. McCarty	T. B. Magath	T. B. Magath
N. Carolina	J. H. Pratt	.....	J. M. Bell	.....
N. Dakota	D. R. Jenkins	H. J. Humpstone	L. P. Dove	L. P. Dove
Ames	S. W. Beyer	L. H. Pammel	P. E. Brown	Chas. Murray
Rutgers	M. T. Cook	F. C. Van Dyck	P. A. van der Meulen	G. Winchester
McGill	W. W. Chipman	A. S. Eve J. B. Porter	R. DeL. French	R. DeL. French
Kentucky	P. P. Boyd	W. D. Funkhouser	E. S. Good	E. N. Fergus
Idaho	J. E. Wodsedalek	M. F. Angell	Henry Schmitz	C. E. Behre
Sigma Xi Club of University of Oklahoma	D. A. Richards	.....	J. B. Umpleby	J. B. Umpleby
Sigma Xi Club of Arizona			H. B. Leonard	
Sigma Xi Club of Southern California	W. L. Hardin	.....	P. W. Merrill	E. E. Chandler
Sigma Xi Club of Duluth	Charles E. Goldthwaite	.....	E. W. Kelly	.....

Offices of Recording and Corresponding Secretary combined according to advice of Convention with the exception of Yale and Texas in which chapters only the Corresponding Secretary is listed.

List corrected up to December 1, 1922.

OFFICIAL ANNOUNCEMENTS

Associate membership emblems can be secured only by order from the chapter secretary to the national secretary. All orders must be prepaid. Special order blanks sent on request.

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Title-Page and Table of Contents of any volume on request.

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Seventh (Philadelphia) Convention. 1904. Pamphlet. 15 pp.
Eighth (New York) Convention. 1906. Pamphlet. 7 pp.
Ninth (Chicago) Convention. 1908. Pamphlet. 14 pp.
Tenth (Baltimore) Convention. 1909. Pamphlet. 6 pp.
Eleventh (Boston) Convention. 1909. Pamphlet. 16 pp.
Twelfth (Minneapolis) Convention. 1910. Pamphlet. 27 pp.
Thirteenth (Washington) Convention. 1911. Pamphlet. 27 pp.

Later conventions are reported in the QUARTERLY.

PRINTED BLANKS

The General Convention has instructed the Secretary to forward to chapters under the following stipulations:

Membership Certificates, stamped with the great seal of the Society. In packages of fifty prepaid, on advance payment of $2.50 for each package. Please specify carefully whether for regular or associate members.

Index Cards, provided a duplicate set be sent for the general index of the Society maintained in the secretary's office. Gratis.

MAILING LISTS FOR THE QUARTERLY

Chapter secretaries are requested to furnish a correct list of mailing addresses of active members for the printer. Blank forms. Gratis on demand.

The mailing list should be sent early in September and be valid for the academic year. All changes of address and all other correspondence should be addressed to the Secretary of Sigma Xi, Edward Ellery, Union College, Schenectady, N. Y.

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